

CLAIMS

1. (currently amended) An access control method for an internet television system where each television channel is carried over a different multicast group, and subscribers join a particular multicast group in order to receive a particular channel, the access control method comprising:

distributing multicast group access control information from a distribution device to a plurality of access devices for use by the access devices in authenticating subsequent requests by individual host devices to join a television channel multicast group in order to reduce delay in authentication when a host device changes television channels, wherein each access device is logically closer to the host device from which the access device receives the request than the distribution device;

receiving, by one of the access devices, a subsequent request by one of the host devices to join the television channel multicast group in order to change television channels;

determining, by the access device, whether the host device is authorized to join the television channel multicast group, and receive a particular television channel, based upon the access control information distributed from the distribution device; and

admitting, by the access device, the host device to the television channel multicast group if and only if the host device is determined to be authorized to join the television channel multicast group,

whereby the access device receives the access control information before it is needed for determining whether the host device is authorized to join the multicast group, thereby facilitating changing channels by reducing authentication delay.

2. (original) The access control method of claim 1, wherein distributing the access control information from the distribution device to the access device comprises:

pushing the access control information from the distribution device to the access control device using a predetermined push mechanism.

3. (original) The access control method of claim 2, wherein the predetermined push mechanism comprises a reliable multicast mechanism.

4. (original) The access control method of claim 3, wherein pushing the access control information from the distribution device to the access control device using the predetermined push mechanism comprises:

joining a predetermined multicast group by the access device;

sending the access control information to the predetermined multicast group by the distribution device using the reliable multicast mechanism;

receiving the access control information by the access device from the multicast group using the reliable multicast mechanism.

5. (original) The access control method of claim 2, wherein the predetermined push mechanism comprises a policy service.

6. (original) The access control method of claim 5, wherein the policy service comprises a Common Open Policy Service (COPS).

7. (original) The access control method of claim 5, wherein pushing the access control information from the distribution device to the access control device using a predetermined push mechanism comprises:

sending the access control information from the distribution device to the access device in the form of policy information using the policy service.

8. (original) The access control method of claim 2, wherein the predetermined push mechanism comprises a management mechanism.

9. (original) The access control method of claim 8, wherein the management mechanism comprises a Simple Network Management Protocol (SNMP).

10. (original) The access control method of claim 8, wherein the management mechanism comprises a Command Line Interface (CU).

11. (original) The access control method of claim 8, wherein pushing the access control information from the distribution device to the access control device using a predetermined push mechanism comprises:

sending the access control information from the distribution device to the access device in the form of management information using the management mechanism.

12. (original) The access control method of claim 1, wherein determining whether the host device is authorized to join the television channel multicast group comprises:

authenticating the host device based upon the access control information.

13. (original) The access control method of claim 1, wherein admitting the host device to the television channel multicast group comprises:

joining the television channel multicast group by the access device using a predetermined multicast routing protocol.

14. (original) The access control method of claim 13, wherein the predetermined multicast routing protocol comprises a Protocol Independent Multicast (PIM) multicast routing -protocol.

15. (currently amended) An apparatus for distributing access control information in an internet television system where each television channel is carried over a different multicast group, and subscribers join a particular multicast group in order to receive a particular channel at a host device, the apparatus comprising:

maintenance logic and memory operably coupled to maintain multicast group access control information; and

distribution logic and an interface operably coupled to distribute the access control information to at least one access device using a predetermined push mechanism in order to reduce delay in authentication when a host device changes television channels, wherein the access device is operable to transmit the channel to the host device and is logically closer to the host device than the apparatus for distributing access control information, whereby the access device receives the access control information before it is needed for determining whether a host device is authorized to join a multicast group, and receive a

particular television channel, and whereby access control information is moved closer to the host device, thereby facilitating changing channels by reducing authentication delay.

16. (original) The apparatus of claim 15, wherein the predetermined push mechanism comprises a reliable multicast mechanism.

17. (original) The apparatus of claim 16, wherein the distribution logic is operably coupled to send the access control information to a predetermined multicast group using the reliable multicast mechanism.

18. (original) The apparatus of claim 15, wherein the predetermined push mechanism comprises a policy service.

19. (original) The apparatus of claim 18, wherein the policy service comprises a Common Open Policy Service (COPS).

20. (original) The apparatus of claim 18, wherein the distribution logic is operably coupled to send the access control information to the access device in the form of policy information using the policy service.

21. (original) The apparatus of claim 15, wherein the predetermined push mechanism comprises a management mechanism.

22. (original) The apparatus of claim 21, wherein the management mechanism comprises a Simple Network Management Protocol (SNMP).

23. (original) The apparatus of claim 21, wherein the management mechanism comprises a Command Line Interface (CLI).

24. (original) The apparatus of claim 21, wherein the distribution logic is operably coupled to send the access control information from the distribution device to the access device in the form of management information using the management mechanism.

25. (currently amended) A computer program embedded in a tangible storage medium for controlling a computer system for delivering television where each television channel is carried over a different multicast group, and subscribers join a particular multicast group in order to receive a particular channel at a host device, the computer program comprising:

maintenance logic programmed to maintain multicast group access control information;
and

distribution logic programmed to distribute the access control information to at least one access device using a predetermined push mechanism in order to reduce delay in authentication when a host device changes television channels, wherein the access device is operable to transmit the channel to the host device and is logically closer to the host device than the apparatus for distributing access control information,

whereby the access device receives the access control information before it is needed, and whereby access control information is moved closer to the host device, thereby facilitating changing channels by reducing authentication delay.

26. (original) The computer program of claim 25, wherein the predetermined push mechanism comprises a reliable multicast mechanism.

27. (original) The computer program of claim 26, wherein the distribution logic is programmed to send the access control information to a predetermined multicast group using the reliable multicast mechanism.

28. (original) The computer program of claim 25, wherein the predetermined push mechanism comprises a policy service.

29. (original) The computer program of claim 28, wherein the policy service comprises a Common Open Policy Service (COPS).

30. (original) The computer program of claim 28, wherein the distribution logic is programmed to send the access control information to the access device in the form of policy information using the policy service.

31. (original) The computer program of claim 25, wherein the predetermined push mechanism comprises a management mechanism.

32. (original) The computer program of claim 31, wherein the management mechanism comprises a Simple Network Management Protocol (SNMP).

33. (original) The computer program of claim 31, wherein the management mechanism comprises a Command Line Interface (CLI).

34. (original) The computer program of claim 31, wherein the distribution logic is programmed to send the access control information from the distribution device to the access device in the form of management information using the management mechanism.

35. (currently amended) An apparatus for providing receiver access control in an internet television system for delivering television where each television channel is carried over a different multicast group, and subscribers join a particular multicast group in order to receive a particular channel at a host device, the apparatus comprising:

distribution logic operably coupled to receive multicast group access control information from a distribution device using a predetermined push mechanism in order to reduce delay in authentication when a host device changes television channels;

host interface logic operably coupled to receive a request from a host device to join a television channel multicast group; and

access control logic operably coupled to determine whether the host device is authorized to join the television channel multicast group based upon the access control information, wherein the apparatus is logically closer to the host device than the distribution device, whereby the

access device receives the access control information before it is needed, and whereby access control information is moved closer to the host device, thereby facilitating changing channels by reducing authentication delay.

36. (original) The apparatus of claim 35, wherein the predetermined push mechanism comprises a reliable multicast mechanism.

37. (original) The apparatus of claim 36, wherein the distribution logic is operably coupled to join a predetermined multicast group and receive the access control information from the predetermined multicast group using the reliable multicast mechanism.

38. (original) The apparatus of claim 35, wherein the predetermined push mechanism comprises a policy service.

39. (original) The apparatus of claim 38, wherein the policy service comprises a Common Open Policy Service (COPS).

40. (original) The apparatus of claim 38, wherein the distribution logic is operably coupled to receive the access control information from the distribution device in the form of policy information using the policy service.

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41. (original) The apparatus of claim 35, wherein the predetermined push mechanism comprises

a management mechanism.

42. (original) The apparatus of claim 41, wherein the management mechanism comprises a Simple Network Management Protocol (SNMP).

43. (original) The apparatus of claim 41, wherein the management mechanism comprises a Command Line Interface (CLI).

44. (original) The apparatus of claim 41, wherein the distribution logic is operably coupled to receive the access control information from the distribution device in the form of management information using the management mechanism.

45. (currently amended) A computer program embedded in a tangible storage medium for controlling a computer system for delivering television where each television channel is carried over a different multicast group, and subscribers join a particular multicast group in order to receive a particular channel at a host device, the computer program comprising:

distribution logic programmed to receive multicast group access control information from a distribution device using a predetermined push mechanism in order to reduce delay in authentication when a host device changes television channels;

host interface logic programmed to receive a request from a host device to join a television channel multicast group; and

access control logic programmed to determine whether the host device is authorized to join the television channel multicast group based upon the access control information, wherein

the host interface logic is executed by a device that is logically closer to the host device than the distribution device, whereby the access device receives the access control information before it is needed, and whereby access control information is moved closer to the host device, thereby facilitating changing channels by reducing authentication delay.

46. (original) The computer program of claim 45, wherein the predetermined push mechanism comprises a reliable multicast mechanism.

47. (original) The computer program of claim 46, wherein the distribution logic is programmed to join a predetermined multicast group and receive the access control information from the predetermined multicast group using the reliable multicast mechanism.

48. (original) The computer program of claim 45, wherein the predetermined push mechanism comprises a policy service.

49. (original) The computer program of claim 48, wherein the policy service comprises a Common Open Policy Service (COPS).

50. (original) The computer program of claim 48, wherein the distribution logic is programmed to receive the access control information from the distribution device in the form of policy information using the policy service.

51. (original) The computer program of claim 45, wherein the predetermined push mechanism comprises a management mechanism.

52. (original) The computer program of claim 51, wherein the management mechanism comprises a Simple Network Management Protocol (SNMP).

53. (original) The computer program of claim 51, wherein the management mechanism comprises a Command Line Interface (CU).

54. (original) The computer program of claim 51, wherein the distribution logic is programmed to receive the access control information from the distribution device in the form of management information using the management mechanism.

55. (currently amended) An internet television system for delivering a video signal to a host device for display, comprising:

a distribution device in communication with at least one access device over a communication network, wherein the distribution device uses a predetermined push mechanism to distribute multicast group access control information to the at least one access device in order to reduce delay in authentication when a host device changes television channels, and wherein the at least one access device uses the access control information to control access to at least one television channel multicast group, wherein the access device is logically closer to the host device than the distribution device, whereby the access device receives the access control

information before it is needed, and whereby access control information is moved closer to the host device, thereby facilitating changing channels by reducing authentication delay.